he did not initially denounce allopaths; he criticized osteopaths as neurocentric rivals. Palmer remained possessive with regard to chiropractic's uniqueness—even when it wasn't—and kept a proprietary hold on spinal displacement as the main form of nervous system interference. Practitioners' predictable cross-accusations appeared in newspapers.

In her early chapters Folk provides a compelling biography of Daniel David Palmer, once a magnetic healer (touch-based therapy) (1895–1896) and then the system's founder. Despite his infamously tense and hostility-ridden relationship with son B.J., he signed over the management of the Palmer School of Chiropractic in Davenport, Iowa, to him in 1902 while he went to California. In Santa Barbara D.D. first demonstrated a spinal adjustment.

Folk highlights the pair's self-promotion, their blending of personal ambitions with spiritual ideals, and the forceful individualism that made them poor collaborators. Their theories "closed the gaps between the physical and spiritual worlds, mind and body, science and religion, and the human and divine" (p. 48).

Despite cruelty and rejection, B.J. aligned with his father's image and portrayed himself as the Developer, D.D. as the Founder/Discoverer. The middle chapters discuss the Palmers' relationship, former students who became competitors, publications founded, texts written, and schools built. A virulent foe was Solon Langworthy, whose American School of Chiropractic and publication *Backbone*—and their followers—ignored the Palmers' instrumentality. Langworthy embraced naturopathy, other alternative healing sects, and scientific medicine—all detested by the Palmers.

Chiropractic's institutional growth is traced through ideas and theories that built the profession: subluxation, the nervous system's regulation of temperature, universal intelligence, vibration theory, and the intertwining of metaphysical beliefs. Folk argues that the third chiropractic theory's turn to vibration "was part of a more intense Metaphysical presentation of chiropractic as well as a hearty embrace of the supernatural" (p. 166). D.D. asserted that chiropractic's spiritual dimensions necessitated an overhaul of extant philosophical and scientific truths. Chiropractic science, he declared, would be called "Chiropractic Religion." We do not know whether patients viewed chiropractic as religion—their experiences are beyond the scope of Folk's book.

B.J.'s leadership eventually eclipsed his father's. The third generation that took over the Palmer School of Chiropractic (1960s) aligned more with mainstream educational standards. The Palmers' legacy, Folk argues, endures in the straight chiropractic movement. It asserts that the practice affects the circulation of divine power—"G-d force"—in the human body.

Folk concludes with late twentieth-century chiropractic's growth internationally and addresses vitalism, populism, and its return to spirituality and metaphysics.

This interdisciplinary, meticulously researched, and original book deserves inclusion in college classroom curriculums. Issues of gender and chiropractic patients' beliefs await the work of future scholars.

Susan E. Cayleff

Susan E. Cayleff is Professor of Women's Studies at San Diego State University. She is the author of Wash and Be Healed: The Water-Cure Movement and Women's Health *(Temple, 1987) and* Nature's Path: A History of Naturopathic Healing in America *(Johns Hopkins, 2016). Her biography* Babe: The Life and Legend of Babe Didrikson Zaharias *(Ilinois, 1996) was a Pulitzer Prize nominee.*

David N. Schwartz. *The Last Man Who Knew Everything: The Life and Times of Enrico Fermi, Father of the Nuclear Age*. xxiii + 436 pp., figs., bibl., index. New York: Basic Books, 2017. $35 (cloth).

Enrico Fermi (1901–1954) is known as the father of the nuclear age. Among his main contributions to science we can mention the Fermi-Dirac statistics, which govern the behavior of particles with half-integer spin, called "fermions" in his honor; the beta-decay theory, which included the neutrino, preventing any

violation of energy and momentum conservation; and nuclear reactions induced by slow neutrons, which were fundamental in both the nuclear pile and atomic weapons and for which he was awarded the 1938 Nobel Prize in Physics. He was also engaged in cosmic ray physics, astrophysics, geophysics, elementary particle physics, and computational physics.

The author of this book is the son of Melvin Schwartz, who was awarded the 1988 Nobel Prize in Physics. David Schwartz was inspired to write Fermi's biography by reading some documents related to Fermi left by his father after his death. This "is not a physics book," Schwartz notes in the preface, even if it has to deal quite often with physics. The choice not to burden the text with "equations, Feynman diagrams, or the like" (p. xi), and to present only a small number of images with a scientific content, might not always have been the happiest one. For instance, the description of the CP-1 nuclear pile would have benefited from at least a sketch of its structure, while a reader with a bit of knowledge in modern physics might have enjoyed seeing, say, a pion decay—not just reading about it.

This book, then, is not meant to be a biography written for an academic audience. Schwartz's aim is to offer the layperson an updated biography of Fermi as a scientist and as "a husband, a father, a colleague, and a friend" (p. xi). The style is perfect for such an audience; the book is very enjoyable to read, with a pace that makes it anything but boring.

Writing a biography of this kind is not an easy task, given the extremely few firsthand documents left by Fermi himself that record his personal thoughts. Historical studies on Fermi abound, but they mostly deal with his scientific work and items strictly related to it. Schwartz draws on reminiscences and memoirs written even some decades after Fermi's death, interviews with scientists and historians, academic books and articles, and archival documents in Italy and the United States. Apart from the biography of Fermi written by his wife (Laura Fermi, *Atoms in the Family: My Life with Enrico Fermi, Architect of the Atomic Age* [Chicago, 1954]), no other biographical reconstruction has given so much space to his private life. From this point of view, this book is welcome.

The Last Man Who Knew Everything is divided into four parts corresponding to the main steps in Fermi's career. Besides his scientific work, Fermi's relation with his relatives, students, and colleagues is depicted. Many pages are devoted to Fermi's connection with the political environment, starting with the Fascist regime in Italy. Fermi's work in the United States was constantly intertwined with his social and political life. Strictly related to his engagement in the Manhattan Project were his role in the Oppenheimer case and a fight with the U.S. Patent Office.

Schwartz sometimes poses lists of questions, which mostly remain unanswered. The occasional answers he does offer rest on admittedly undocumented grounds—for instance, when he suggests that Fermi's interest in statistics and probability arose from his brother's seemingly improbable death during a relatively simple surgical procedure.

The "last man who knew everything" (p. 327), the "father of the nuclear age" (p. 265), the "perfect Confucian gentleman" (p. 326), "one of the wisest men known" (p. 344): Did Fermi really know everything? Schwartz underlines his full competence in both theoretical and experimental physics. At the same time, he recognizes that Fermi was not at ease with some exceedingly abstract ways of studying physics. Schwartz mentions Fermi's lessons in geophysics a couple of times but does not develop further this less known aspect of his work, which might have contributed to his depiction of Fermi's encompassing knowledge.

This book is not a hagiography. Negative aspects of Fermi's temperament are nowhere denied, such as his prankster behavior when a student. Some of them can be explained by the different habits of his time, such as his minimal engagement in child care and family affairs. Fermi's scientific mistakes are vividly highlighted and contribute to a more complete and realistic description of his achievements—for example, his "discovery" of transuranic elements (later proved to be uranium fission) or his inability to predict xenon poisoning of the nuclear pile (which disturbed its working).

There are some errors in the book. It was not Einstein who first dubbed the energy quanta "photons" (p. 44); the unification of Italy took place in 1861, not in 1870 (pp. 4, 32); Garbasso's first name was An-

tonio, not Andrea (p. 53 and index). There are also some typographical errors in Italian spellings in the bibliography, which is in any case very wide ranging and updated to 2016.

Leonardo Gariboldi

Leonardo Gariboldi is a research fellow in history of physics at the Università degli Studi di Milano. His main fields of interest are the history of Italian physics and the history of scientific instruments. He is councilor of the European Society for the History of Science.

Matthew J. James. *Collecting Evolution: The Galápagos Expedition That Vindicated Darwin*. xiii + 284 pp., figs., bibl., index. Oxford: Oxford University Press, 2017. £22.99 (cloth).

Collecting Evolution is a comprehensive account of the California Academy of Sciences expedition to the Galápagos Islands during 1905–1906 by eight young biologists on the schooner *Academy*. The expedition's primary goal was to collect and bring back as many specimens as possible—of the many species of animals and plants found in the archipelago—to enhance the size and reputation of the academy's museum, rather than to test specifically the evolutionary theories associated with Charles Darwin and Alfred Russel Wallace (p. 12). However, in detailing the practices and achievements of the expedition, which collected over seventy-eight thousand specimens, many of them unique to the Galápagos, Matthew J. James also aims to demonstrate that the two-year expedition ultimately served to vindicate the Darwin-Wallace theory of evolution by natural selection. Moreover, the massive collections housed at the academy's museum continue to serve as important resources for contemporary evolutionary thinking.

James's study is a lucid, often lively, contribution to an episode in the annals of evolution that is less well known than perhaps it should be. The book benefits from the author's extensive utilization of the diaries, field notes, journals, photographs, and correspondence of the eight biologists aboard *Academy*, as well as relevant documents of several key scientific and administrative figures—now housed pimarily in the Archives of the California Academy of Sciences in San Francisco—to enrich his scientific as well as personal portraits of the expedition's participants. James's format is unusual in that he presents his findings in fifteen more or less stand-alone chapters rather than as a linear narrative. This structure allows each chapter to present a "complete" story but results, unfortunately, in frequent repetition (sometimes verbatim) of ideas and descriptions throughout the book.

James's main thesis—that the 1905–1906 collecting expedition to the Galápagos *did* serve in the overall vindication of the Darwin-Wallace theory of evolution by natural selection in the first half of the twentieth century—emerges, nonetheless, clearly. The massive array of Galápagos animal and plant specimens brought back by *Academy* enabled evolutionary scientists to establish some significant instances of natural selection in operation. These include examples of the evolutionary diversification and speciation that occurs on remote oceanic islands, as shown by the species of native land snails, Darwin's "darkling beetles" (members of the genus *Stomion*), and the iconic Darwin's finches. The ornithologist David Lack—often called the father of evolutionary ecology—relied heavily on the expedition's vast collection of Galápagos finches in the preparation of his landmark 1947 book, *Darwin's Finches*. Lack demonstrated that the well-known differences in beak sizes, strengths, and shapes of the several species of Galápagos finches are directly related to the different food sources available and thus to reproductive success. Another advance made possible by the expedition was the taxonomic revision of the "family portrait" of all the extant and extinct species of the giant tortoises found in the Galápagos, made by John Van Denburgh in the first decade following the return of *Academy*. Plant specimens from the expedition have also been deployed to demonstrate overall patterns of evolutionary diversification following colonization and single-island endemics. Species of the genus *Scalesia* (woody sunflower) embody a developmental story parallel to that of the tortoises, land snails, finches, and darkling beetles.